Applicant: – Storm Lake Community Schools – NW Region

Email address:

scole@slcsd.org

Name of Individual Submitting Application:

Stacey Cole

Executive Summary

In 500 words or less, summarize the school district's, non-public school system's or accredited, stand-alone non-public school's vision for your Computer Science is Elementary initiative.

In Storm Lake we understand that the children we serve on a day to day basis count on us to bring our best to them each and every day. We know that with the large number of students of color and traditionally marginalized children in our schools that if we don't take every opportunity to prepare them for their future and not our past we are failing them. We take a "failure is not an option" approach. Robert Cole (2008) reminds schools that strategies that work with the children we serve a) work best in context with other ideas and concepts and include tasks, goals and techniques that are interactive and interdisciplinary, rather than abstract and unrelated, b) focus on students working in social situations and not in isolation, and c) empower students to be actively involved in the process of their own learning rather than being passively receptive. We are also aware of the implicit bias that students of color and students from poverty face in all schools across our nation each and every day.

Our vision for the Computer Science is Elementary initiative work to bring more of the strategies that work to educate ALL students and work to combat the unconscious barriers that many of our students can fact. In order to combat these barriers, we have included techniques throughout the grant that work in favor of the students we serve in Storm Lake including a) work around the importance of high expectations for problem solving and critical thinking for all students, b) a continued development of the understanding of cultural differences to avoid culture clashes in our classrooms, c) a focus and expectation that all students will receive challenging instruction in the area of computer science in our elementary school with high levels of support for those students in need of more, d) involvement of families in our journey in order to provide greater understanding to families about the importance of challenging offerings for their children as well as potential career choices later in life.

Most importantly we will use the work of Eric Jensen (2016) to guide our work as we shift teacher, student, family and community mindsets from one of a deficit thinking model to one that includes gutsy goals, persisting with grit, showing empathy and engaging student voice with a high degree of student direction on pace and interest within our coding curriculum. This computer science initiative will happen within a larger context of serving all of our students better. It will help us gain a better understanding of what our students can do instead of focusing on isolated, low level skills that they sometimes can’t do. It will help us create a high degree of student engagement, challenge and joy as we work together to create learning tasks that offer students the opportunity to learn coding within the

context of literacy and math as we give our students new and greater purposes to engaging in content area learning.

Demographics

Points Awarded: **/ 10**

10 points

What is the name of the district, system or stand-alone non-public school making the application?
Storm Lake Schools

What is the name of elementary school(s) that will participate in Computer Science is Elementary?
Storm Lake Elementary

What grades does the participant building(s) serve?
K-4

Provide the name, email address and phone number of the primary lead for the application.

Stacey Cole, scole@slcsd.org, 712-732-8060

Provide the name, email address and phone number of the fiscal agent or business manager who will handle reimbursement if awarded.

Trudy Pedersen, tpedersen@slcsd.org, 712-732-8060

In what STEM region is the district/system/stand-alone non-public school located? (https://iowastem.gov/regions)

Northwest STEM Region

Based on Student Reporting in Iowa (SRI) Oct. 1, 2018, reporting, what percentage of students in the participating elementary school(s) are eligible for free and reduced-price lunch?

Seventy-four percent of our students qualified for free/reduced lunch as of the Oct. 1, 2018 SRI data.

Based on SRI Oct. 1, 2018, reporting, what percentage of students in participating elementary school(s) are underrepresented populations in the field of computer science (African-American, Hispanic, American Indian/Alaskan, Native Hawaiian/Pacific Islander)?

Sixty-five percent of our students are served through our English Language Learner program. Fifty-two percent of our students are Hispanic, 17 percent are Asian, 15 percent are Caucasian, 9% are Pacific-Islander, 5 percent are Black with 2% having two or more races.

Goals and Measurements

Points Awarded: / 20

20 points

What are the measurable goals for the Computer Science is Elementary initiative in the district/system/stand-alone non-public school?

Representatives from grade levels volunteer as members of the Computer Science Team who will visit schools and attend training, pilot lessons & make curricular decisions (ongoing)

The CS team will determine what needs to be purchased (curriculum and supplies)for the pilot throughout the year & for whole school implementation (by 6/20)

All students will engage in no less than 5 lessons that include a high degree of student engagement, challenge and joy with a CS component, including participation in a school wide & community STEM event (by 4/21)

All teachers will engage in professional learning as the CS Team makes decisions about curriculum (ongoing).

How do these goals tie to the larger district/system/stand-alone non-public school goals, mission, and vision?

Two of our district goals are to elevate professional practice and raise the academic bar. Participation in this grant will help achieve those goals by engaging teachers in capacity building opportunities helping them to see computer science from a broader lens. Hattie recognizes that teacher efficacy practices (believing in our ability to impact the learning of our students) is one of the top teacher behaviors for changing outcomes for students. Because of this, we understand the importance of creating a guiding coalition that believe in the outcomes we create for students when taking an interdisciplinary approach to teaching thus creating a support system for others as we move forward.

How will the district/system/stand-alone non-public school measure the success of the plan using student data, with an emphasis on achievement and engagement?

In order to measure success we will look at multiple data sets. We will use data such as FAST, ISASP and math screeners. We will also use the TAP instructional framework to guide our qualitative measurement on engagement, particularly seeking information on the rubric about the categories: motivating students, presenting instructional content, activities and materials, and questioning.

Plan

Points Awarded: / 40

40 points

Describe how the plan will be launched or built upon an existing computer science education in the proposed participating elementary school(s).

We have a limited number of teachers who are already showing an interest in the area of coding instruction. We currently participate in the Hour of Code as well as use a number of Code.org lessons. Our students love the days that they get to engage in coding activities and we know that we need to expand upon the program we currently have going.

This does not impact the elementary school building, but it should be noted that computer sciences classes are currently also being added to our high school program through a program through Amazon. This will ensure as our elementary students progress through our system, there are programs that are in place for them to continue their journey. We also have a strong robotics program at our high school that requires our students to have coding knowledge so there are multiple opportunities for our students to grow their coding skills as they move through our school system. We are especially proud of the number of students of color and girls who are participating in our robotics program showing our district philosophy of supporting all students with high expectations and high levels of support to meet those expectations.

Impact

Sub-Section Points Awarded: / 10

What is the plan for computer science instruction by July 1, 2020?

Computer science will be integrated into other content areas and will be ready to go for the 2020-2021 school year for all grades in our elementary school. It is our intent to build lessons and content both in the general education classroom as well as in our STEM classroom to ensure that students have multiple opportunities to experience coding.

Our plan includes the opportunity for all students to engage in coding tasks and activities to ensure that our students from marginalized populations are included in all tasks that involve computer science. This would mean that our 792 students of color can begin to see themselves as people deserving of careers that are STEM related. This will also help us ensure that all of our youngest learners begin their education career with positive science experiences helping to enhance the chances of them having the desire to engage in science later in life.

Does the plan build on existing computer science instruction or launch a first-time initiative?

We have a limited number of computer science activities going on at the current time. This initiative will build on those instructional activities that are currently going but will greatly expand the reach of coding within our overall curriculum. Right now computer science instruction happens as a stand alone component of the day whether it be in a specials classroom, on a special day (hour of code) or when a teacher embeds a coding activity into their own classroom experiences.

We understand the larger impact we can have on our students' views of computer science and their own abilities to take on science careers in general with an increased push on computer science both in the younger grades and across the curriculum. We also understand that STEM careers are the fastest growing in the nation and therefore we believe in the importance of carefully considering our expansion plan as we move to ensure that all students are prepared to take on science related jobs as they get older. In order to have students prepared to take on those science related jobs, we also know the importance of pushing our computer science initiative into other content areas in order to better prepare our students for the critical thinking and problem solving skills they will need to solve the problems of the future.

Will computer science be integrated into other subjects or delivered as a stand-alone discipline?

The Storm Lake Community School District believes in the power of interdisciplinary instruction to meet the needs of the students we serve. We believe using an interdisciplinary approach helps our students develop knowledge, insights, problem solving skills, self-confidence, self-efficacy and a passion for learning. According to the National Council for Teachers of English (1995) educational experiences are more authentic and of greater value to students when the curricula reflect real life, which is multi-faceted rather than compartmentalized. In the real world, problems are complex so no

single discipline can adequately describe or resolve issues. Because of this, we believe that our computer science education model should be placed within the context of real world problems and should ask students to think critically and engage in tasks that ask them to think about problems within a larger context.

We know that we are preparing a students for a world that does not yet exist. If we are going to do that, problem solving and critical thinking are going to need to be at the forefront of minds as we work to design a computer science education model for the future.

We also understand the importance of integration into core content areas when considering our specific student population. We understand the critical nature of our district offering instruction to students in culturally relevant ways that presents a value for all cultures in the classroom and promotes diversity in thought when solving complex questions. Because of this, we will take great care in ensuring that our coding curriculum and approach enhances our literacy and math tasks rather than occurs in isolation of those subject areas.

What grade level(s) of students and teachers will be included initially?

Initially we will seek volunteers from grade level teams to participate in the planning and the piloting of curriculum and materials. This initial team will be comprised of teachers from every grade level in our building as well as represent special education teachers and exploratory teachers. The team will be the guiding coalition for the work of obtaining or creating high-quality computer science curriculum that is aligned to standards. This team will include 8-12 teachers in the initial implementation stage.

This team will have several roles in the two years that the district receives funding.

First, the team will be a team of learners. It will be important for us to support the capacity building of this team as they learn together and begin to think broadly about the shared vision for the computer science program in the elementary school.

Second, the team will serve as early innovators. The members of this team will pilot materials and lesson plans that may one day become our final recommendation for the curriculum and materials. This team will meet on a regular basis and share what is working well with different materials, what isn't working well for our students and what we may have learned about that we need to continue to explore.

Third, this team will serve as a lead grade level team member as we begin to put lessons and materials out to all teachers to implement. The CS team will help other teachers get comfortable with and lead the lessons that are chosen from the CS curriculum.

Finally, this team will serve as a community resource. They will be the team that speaks on behalf of computer science instruction in the elementary building. They will host meetings with schools in our region to help other schools think about how they can begin a computer science model in their school. They will be the team that takes our work out to a broader audience in our community to groups such as Rotary. They will also be the group that presents at conferences when we are asked to share our work publicly in the state.

What is the plan for expansion to all students in all grades in your school?

Our initial plan will include all grade levels in our school but will not include all teachers. That being said, all students will participate in a limited number of computer science options even in the first year

as our STEM teacher, our computer teacher and our art teacher embed lessons in the first year of implementation.

Our plan starts with a small team of teachers that are excited about learning about computer science and then expands to all content area teachers ensuring that all 900 students in our elementary building are touched by this initiative.

Beyond expanding to all students in all grades, we also hope to expand the excitement about this initiative beyond our classroom walls and into the community by engaging parents and community partners in events as appropriate.

Curriculum

Sub-Section Points Awarded: / 10

What is the plan to identify, revise or write high-quality computer science curriculum aligned to the Iowa Computer Science Standards, 21st Century Skills, Universal Constructs and career exploration?

The Computer Science Team will begin meeting in the summer of 2019 to begin to review the Iowa Computer Science Standards, the 21st Century Skills and the Universal Constructs. They will use their time this summer to begin to refine the vision we currently have for computer science.

First, this team will review all of the listed standards to ensure they have a solid understanding about what the standards say and expect. They will do this by using a refining protocol on the School Reform Initiative website. This protocol will ensure all team members have equitable voices and opportunities to unpack their own understandings of the standards. In addition to unpacking understandings, they will begin to create a list of common coding vocabulary that can build across the grades.

Second, this team will build upon our current vision for computer science and refine our vision for moving forward with integration being a key component. In order to do this, they will use a process including time for teachers to think about what we will need to Start, Stop and Keep doing as a building to make computer science a sustainable initiative beyond the scope of this grant.

Third, the team will spend time during the school year visiting partner schools as well as attending conferences that will broaden our understanding of integrated computer science curriculum.

Fourth, the team will spend time looking at high-quality curriculum that already exists and matching that to the vision and philosophy we are taking or they will spend time creating lessons and tasks that will align to the standards. We will make sure that any and all materials chosen will be looked at through the lens of the particular demographics and needs of our students to ensure that we aren't simply replicating a model but building a model to create better critical thinkers. This will require that we choose tasks that allow students to work at their own pace and with their own interests. It will also be important that we find materials or tasks that use a nice blend of individual work, collaborative teams and large group time.

Finally, the team will go back to the work that began the process in the summer with the standards and revisit the intent of the standards listed to ensure that all materials and curriculum either written or purchased align to the Iowa Academic standards, the computer science standards, the Universal Constructs or the 21st Century Skills.

In addition to the curriculum that is written or purchased, family and community events will include career exploration activities to motivate students to persevere and choose science careers if they are interested. These should also help students better see the need for them to take higher level courses

in high school so all students can achieve their career goals. We will ensure that all students have the opportunity to learn about multiple careers.

Professional Learning

Sub-Section Points Awarded: / 10

What is the plan for professional learning in years one (fiscal year 2020) and two (fiscal year 2021), including participants, providers, timeline, instructional pedagogy, curriculum connections, alignment to Iowa standards and school community/employer partner connections?

In the first fiscal year, we will have one teacher from each grade level and up to three specials teachers participating on our computer science team. This team will collaborate to look at standards and refine a vision for computer science in our elementary building that is aligned to the already existing components in our middle and high schools.

Along with their collaborative time, they will have opportunities to attend conferences and do site visits to further align their own understanding with the shared vision the team creates for computer science in the building. All conferences and site visits will happen prior to May 2021.

Related to implicit biases that potentially inhibit students of color to fully achieve their potential as young scientists, we will also continue to provide professional learning for this team and all elementary teachers are becoming more aware of the biases we hold that may lower our expectations for some students in the name of kindness. Our work with eliminating soft racism will parallel all curriculum and content professional learning as we need to continue to build our awareness of when our own actions inhibit the learning of our students based on unconscious methods.

All computer science team members will be responsible for offering training to their grade level during grade level team meetings as we move from pilot implementation into full implementation in year 2 of the initiative. These grade level team meetings will begin in May 2020 and continue throughout the 20-21 school year. Computer science team members will be expected to train and share monthly.

We also expect to do a formal workshop setting for all staff as we move into full implementation during year 2 after the team has written or chosen a curriculum or set of materials. We anticipate that this training will happen in June or August of 2020.

Community Engagement

Sub-Section Points Awarded: / 10

How will the community be engaged?

Our plan for community engagement goes beyond this initiative. Family engagement is a district wide focus and will be sustained through district funding. A family engagement team is currently being put in place to lead the district in implementing better practices with family engagement. Through this training we are learning that one way to engage families is through social media. As you will see in this plan, we will use social media as one tool to engage families with our computer science initiative. Another tool for family engagement that often goes under utilized is school hallways being used to tell a story about current curriculum work happening in our schools. We will use our family engagement surveys as a baseline for our family engagement work and tie our computer science initiative to this work to not only broaden our perspectives about computer science but to do it in a way that is evidence backed.

How will parents and a broader stakeholder group be involved in planning and implementation of the Computer Science is Elementary initiative?

Another district goal and focus area for the Storm Lake Schools is family and community involvement. Because of this, we have a team currently engaging in the importance of evidence based family engagement. This team will help the computer science team think about how to create events that center around high leverage family engagement strategies. These events will include events that are development oriented and not service oriented meaning that parents will not only learn about computer science but events where they can learn strategies to support computer science learning at home. This could include teaching parents great questions to ask about computer science.

Another way we will engage stakeholder groups is through social media. Family engagement training teaches us how to ask better questions with social media to get families talking to their child about activities from school and then posting on social media sites. Using a social media technique will allow us to keep a constant press on sharing rather than relying on a once a year event where stakeholders can come in.

We will host a STEM day no less than once a year where we will invite parents and stakeholders to participate in many STEM activities. This event already exists in our elementary school and this initiative will allow us to add a computer science component. We anticipate having one of our partners (Buena Vista University) get involved with at least one session that students and families can participate in. We also anticipate ISU extension providing some tips and tools for parents.

Finally, we will use our existing SIAC committee and parent focus groups to help us keep our focus on our needs assessment areas. During these meetings information is shared about initiatives we are pursuing while collecting feedback on initiatives that we should be pursuing. Parent focus groups during the 19-20 school year confirmed the need for more computer science programming in younger grades so we are excited to offer this possibility to them.

Who are or will be the community/employer partner(s) and what is the shared vision for engagement?
We have three current community/employer partners for this initiative. Two of our partners (BVU and ISU Extension) share our vision of engaging students at a younger age to computer science while the hospital (our third partner) understands the importance of future employees entering the workforce with already existing computer skills. As you will see from the community partner letters, they are extremely supportive of our pursuit of this initiative and each play a unique part in our plan.

All applicants must have at least one community/business partner. Please include at least one signed letter of commitment (in PDF format) on employer letterhead from a community/business partner. Up to 10 employer letters may be added. This must be done in order for the application to be considered complete.
Three letters have been uploaded for this component.

Budget

Points Awarded: / 20

20 points

Please include the amount and a brief explanation of the use of funds per cost category not to exceed $50,000 over two years. Allowable expenditures may include the following categories:

Budget Category	Total Request	Year 1	Explanation of Funds	Year 2	Explanation of Funds
Professional Learning	$ 9,000.00	$ 3,000.00	for four people to attend a national conference (an additional 3,000 will be in kind from our TQ funds)	$ 6,000.00	$3,000 for two people to attend a national conference (an additional $3,000 will be added in kind from TQ funds) and an additional $3,000 for training on purchased curriculum with anything over $3,000 coming from TQ
Curriculum Development	$ 16,000.00	$ 8,000.00	for team member payment	$ 8,000.00	for team member payment
Site Visits	$ 8,600.00	$ 4,300.00	$200 per room for 5 nights for 8 people; $300 mileage for travel	$ 4,300.00	$200 per room for 5 nights for 8 people; $300 mileage for travel
District Costs					
Staffing Support	$ 1,000.00	$ 500.00	Team coordinator	$ 500.00	Team Coordinator
Other	$ 15,400.00	$ 7,000.00	$5000 for 12 pack of Osmos and ipads; $2,000 for 12 Blue bots	$ 8,400.00	buying more Osmos or Blue bots as well as well as actual online curriculum costs
TOTAL:	$ 50,000.00	$ 22,800.00		$ 27,200.00	
TOTAL VERIFICATION:	$ 50,000.00				
(Formula Written to Sum totals from Year 1 and 2)					

Cost Sharing (may include in-kind or cash from partners or other education funding streams)

Anticipated cost share over the two-year funding period.

$500 IN KIND (also curriculum coordinator and principal participation on teams in kind)

Year 1 anticipated cost share (in dollars). Please provide a brief explanation.

$500 Prior to year 1: anticipated team (8 teachers and 2 admin) attends Future Ready Iowa Summit April 30th funded out of TQ ($50 per person and $65 per room)

Year 2 anticipated cost share (in dollars). Please provide a brief explanation.

$500 see year 1 -- same will be done in year 2

The expectation for the Computer Science is Elementary award is that the plan uses primarily existing school revenue sources to execute a plan. After year two of the award, what is the plan for sustainability using existing or any additional funding sources?

There is little in our plan that would have to continue past year 2 other than continued purchasing of any materials that would be necessary such as Osmos. The bulk of the money used in this grant is used for capacity building for staff. The sustainability component of this plan includes the continued collaboration of staff around the importance of computer science and the continue focus on purchasing any additional tools that would be needed in the future. The district is already committing dollars to further computer science at our middle school and high school and is committed to opportunities being given to all students in the area of computer science.

Computer Science is Elementary Model Network

Points Awarded: / 10

10 points

To be eligible for the award, participation in the Computer Science is Elementary Model Network is necessary. By checking this box, the district/system/stand-alone non-public school is willing to participate in a Computer Science is Elementary Model Network including, but not limited to, hosting visits and sharing best practices, challenges, opportunities and successes with colleagues across the state.

I agree

Nathan Backman, Ph.D.
Associate professor of computer science
Buena Vista University :: Storm Lake, Iowa
712.749.2019 :: backman@bvu.edu

March 28, 2019

Iowa Governor's STEM Advisory Council
University of Northern Iowa
214 East Bartlett Hall
Cedar Falls, IA 50714-0298

RE: Supporting Storm Lake Elementary School in Computer Science is Elementary

I am Dr. Nathan Backman, an associate professor of computer science at Buena Vista University, and I have had opportunities to discuss growing computer science education initiatives with administration and staff of the Storm Lake Elementary School District. We, at BVU, are very excited about supporting and contributing to their efforts to become a model school for the Computer Science is Elementary program.

As a post-secondary computer science educator, I clearly see the surging influence of technology within aspects of all industries and the corresponding growth in employment opportunities for those with technical backgrounds. Technology (specifically computer science) is remarkable in that the barrier to entry is so low and accessible which provides us with wonderful opportunities to support students at the elementary level, aiding them in developing computational thinking skills early which support many disciplines.

A special point of interest with the Storm Lake Elementary School is their incredible diversity. I regularly teach about the importance of diversity *within* computer science. There are many ways to solve problems and every individual will develop solutions that are ultimately rooted in their own personal preconceptions, biases, experiences, and background. Sharing these many perspectives helps all of us to gain a greater understanding of how to solve problems. Diversity in background, in process, in thought, and individuals should be cherished and shared and truly helps to empower computer scientists at all levels. Storm Lake Elementary School has a remarkable opportunity here!

While a larger school for our area, Storm Lake Community School District is quite flexible to provide high-impact learning opportunities to their students and can therefore positively impact many students in exciting and innovative ways. These are a just a handful of reasons that BVU and our computer science students have enjoyed working with Storm Lake Elementary School both on their campus and by bringing their students to our campus at BVU. Our computer science students love to work with their students.

We strongly support the candidacy of Storm Lake Elementary School for the Computer Science is Elementary program. We look forward to seeing the amazing things they will achieve as we work towards a common goal.

Regards,

Nathan Backman

Nathan Backman
Associate professor of computer science
Buena Vista University

Buena Vista
REGIONAL MEDICAL CENTER

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Storm Lake, Iowa 50588
Ph. 712.732.4030
Fax 712.732.4034
www.bvrmc.org

March 28, 2019

RE: Supporting Storm Lake Elementary in the Computer Science is Elementary

I am writing this letter to show BVRMC's support for Storm Lake Elementary School System's efforts to improve, enhance and inspire children's love of computer science.

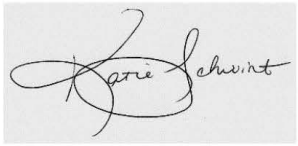
BVRMC is a critical access hospital and a major employer in the area. We employ over 400 employees. Annually we deliver 350 babies and perform over 3000 surgeries. Our hospital is actually growing and thriving while other rural hospitals struggle to keep their doors open.

Our biggest asset is our employees that provide exceptional care using high-tech computers, electronic medical records and diagnostic equipment. In our walls computers allow staff to prevent, catch and treat diseases. With over 20 languages spoken in our community, video translating and other technology are vital to verbally communicate and educate patients.

Our hospital's future depends on the skills of future employees, our kids, to become those nurses, doctors, and techs. By our school system inspiring kids to explore computer science they are providing life-long skills to enhance their career path and help employers find employees with the skills we need.

I also speak as a parent in this community. This school does amazing work encouraging all kids to learn and thrive. I know that they have a passion for STEM and will continue this work long after the grant is gone – this grant will only allow them to get there faster.

Sincerely,



Katie Schwint
Executive Director of Communications

IOWA STATE UNIVERSITY
Extension and Outreach

Buena Vista County Extension
824 Flindt Drive
Storm Lake, Iowa 50588
Phone: 712-732-5056
http:// www.extension.iastate.edu/buenavista

March 25, 2019

RE: Letter of Commitment to Serve as a Community Partner with Storm Lake Elementary School for the Iowa Computer Science is Elementary Project

Iowa State University Extension and Outreach - Buena Vista County enthusiastically agrees to serve as a community partner with Storm Lake Elementary School in their application for the Iowa Computer Science is Elementary Project.

ISU Extension and Outreach-Buena Vista County and Storm Lake Elementary School are currently in partnership to support STEM educational opportunities for youth in grades K-4. Extension supports STEM education in a variety of ways including the following. First, we serve as a local "Partner in Excellence" organization paired specifically with the 4th grade delivering in-school STEM curriculum. Second, we provide STEM activities for 2nd grade students in the after-school program. Finally, we provide STEM activities during family nights and special events across all grade levels. The Iowa Computer Science is Elementary Project award would provide resources to increase the computer science learning opportunities available for youth, in part through an expanded community partnership.

ISU Extension and Outreach - Buena Vista County asks that you give your most serious consideration to the application. We welcome the opportunity to expand our community partnership to meet the needs of youth in the area of computer science.

Sincerely,

Nichol Kleespies
4-H Youth Outreach Educator
ISU Extension and Outreach - Buena Vista County

Reviewer Name:

Reviewer Signature: **Total Points Awarded:** **/100**